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REMARKS

The above Amendments and these Remarks are submitted under 35 U.S.C. § 132 and 37 C.F.R. § 1.116 in response to the Final Office Action mailed January 8, 2007.

Summary of the Examiner's Action and Applicant's Response

The Examiner again rejected Claims 1-9 under 35 U.S.C. § 102(b) based on the admitted prior art shown in FIG. 1 in the application. The Examiner has again rejected Claim 10 under 35 U.S.C. § 102(b) as being anticipated by Anderson, U.S. Patent No. 3,202,937. Applicant respectfully traverses the rejections.

The Examiner again stated that Claims 4 and 5 would be allowable if rewritten in independent form. Since no details were given as to any rejection under 35 U.S.C. § 102(b) for Claims 4 and 5, Applicant assumes herein that Claims 4 and 5 would be allowable if rewritten in independent form.

The Applicant very much thanks the Examiner for his time considering our proposed amendments and our arguments and for his valuable insights during a telephonic interview conducted on April 5, 2007, and in a follow-up discussion on April 6, 2007. The Examiner indicated during the follow-up discussion that our arguments must be presented in a formal response so that he can better consider them.

In this Amendment, Applicant has amended Claims 1, 3, 9, and 10. Applicant requests entry of this amendment, after which, Claims 1-10 will be pending.

Response to the Rejection of Claims 1-9 under 35 U.S.C. § 102(b)

The Examiner responded to Applicant's argument in the last response as follows:

"With respect to applicant's arguments the circuit in Fig 1 does not teach providing a predetermined current for the Zener diode as a function of a periodic pulse, such that the bias current is turned on during the time the capacitor is being charged and is turned off for a substantial amount of the time when the capacitor is discharging and the current generated for the zener diode 26 is not a function of a periodic pulse, the Examiner disagrees."

The Examiner further stated that:

"[t]he bias current of a circuit (according to the Seventh Edition of Modern Dictionary of Electronics edited by Rudolf F. Graf) is the current through the base emitter junction of a transistor. It is adjusted to set the operating point of the transistor. In light of the specification, the bias current of the diode would be the

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current used to set the operating point of the diode. In the case of the bias current of the Zener diode it would be the current going through the zener diode (26)."

Applicant respectfully submits that the sawtooth generator of the present invention generates a bias current for a zener diode in the form of a pulse, i.e., a predetermined bias current pulse. Regarding the embodiment shown in FIG. 2, the present specification states that "[t]he zener diode 126 is arranged so that, when provided with the required bias current, it causes the peak of the sawtooth voltage signal at node 135 to be limited as a function of the rated zener voltage. In sawtooth generator 160, zener diode 126 is switched on and off by transistor 122. Thus, a bias current is provided to switch on the zener diode 126 only during the time that pulses are generated by zero crossing detector 30." (Paragraph [0025]). (Emphasis added). The key reason for this functionality, according to the present invention, is that it saves energy by switching off the current flowing through the zener diode during most of the sawtooth interval. FIG. 4 illustrates an exemplary bias current pulse for the circuit in FIG. 2.

In contrast, Applicant respectfully submits that a source of the bias current in the cited prior art FIG. 1 is connected in a path between Vcc and ground that does not contain any transistor switch, i.e., this current is not a pulse or a function of a periodic pulse.

Applicant has amended Claim 1 to further emphasize the above distinction. Support for this amendment is found in Paragraph [0025]. More specifically, Claim 1, as amended, includes "a zener diode for generating said predetermined reference voltage in response to a predetermined bias current pulse when said zener diode is reverse biased". The second circuit in Claim 1 is "for generating said predetermined bias current pulse that is a function of said periodic pulse such that said predetermined bias current is turned on during the time said first capacitor is being charged and off for a substantial amount of the time when said first capacitor is discharging." Applicant respectfully submits that FIG. 1 does not teach generating a predetermined bias current pulse that is a function of a periodic pulse such that said predetermined bias current is turned on during the time said first capacitor is being charged and off for a substantial amount of the time when said first capacitor is discharging, as claimed in Claim 1.

Applicant respectfully submits, therefore, that Claim 1 is not anticipated by prior art FIG. 1 in the application. Claims 2, 3, and 6-8 depend directly or indirectly from Claim 1 (in addition to Claims 4 and 5, which the Examiner indicates are allowable if rewritten into independent form), and thus are respectfully submitted as not being anticipated for the same reasons as above for Claim 1.

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Further regarding Claim 3, Applicants have amended Claim 3 to replace "said collector coupled to said anode" with "said collector connected to said anode". Support for the amendment is provided in FIG. 2 and in the present specification in paragraphs [0020] – [0022]. Applicant respectfully submits that FIG. 1 does not teach having a collector of a first transistor connected to the anode of a zener diode at a first node, as claimed in Claim 3. Applicant respectfully submits, therefore, that for this additional reason Claim 3 is not anticipated by prior art FIG. 1.

Applicants have amended Claim 9 with changes corresponding to the amendment to Claim 1. Applicant respectfully submits, therefore, that Claim 9 is not anticipated for the same reasons as above for Claim 1.

Response to the Rejection of Claims 10 under 35 U.S.C. § 102(b)

With respect to Applicant's arguments in the last response, the Examiner stated in the Office Action that:

"With respect to applicants arguments concerning claim 10, the predetermined time interval can be any range of time because the applicant does not specify it. In the Anderson reference the predetermined interval is the range of all time (set by the user of the circuit) because the control circuit is constantly on. (i.e. if the operator decides to turn on the circuit for 15 minutes, it is determined in advance that the circuit will be on for 15 minutes. Therefore the time is predetermined.) Therefore the circuit is capable of functioning as claimed [i]n claim 10 and remains anticipated by Anderson."

In response, Applicant has amended Claim 10 to make the differences with Anderson more clear. More specifically, Claim 10 is directed to "[a] reference circuit for providing a reference voltage during a predetermined time interval of a periodic pulse". Support for the amendment is found in Paragraph [0025]. Applicant respectfully submits that Anderson does not disclose a predetermined time interval of a periodic pulse as claimed in Claim 10. Applicant respectfully submits, therefore, that Claim 10 is not anticipated by Anderson.

Conclusion

For the above reasons, Applicant respectfully submits that all pending claims, Claims 1-10, in the present application are allowable. Such allowance is respectfully solicited.

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If a telephone conference would expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (415) 984-8200.

Respectfully submitted,



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